DOCUMENT RESUME

ED 134 496 95 SO 009 720

AUTHOR	Manson, Gary; Vuicich, George
TITLE	Toward Geographic Literacy: Objectives for Geographic Education in the Elementary School.
INSTITUTION	ERIC Clearinghouse for Social Studies/Social Science Education, Boulder, Colo.; Social Science Education Consortium, Inc., Boulder, Colo.
SPONS AGENCY	National Inst. of Education (DHEW), Washington, D.C.
PUB DATE	77
NOTE	35p.
AVAILABLE FROM	Publications, Social Science Education Consortium, 855 Broadway, Boulder, Colorado 80302 (order SSEC no. 196, $1.50 paper cover)
EDRS PRICE	MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS	Bibliographic Citations; Cognitive Objectives; Concept Formation; *Educational Objectives; Educational Trends; Elementary Education; Evaluation Methods; *Geography; *Geography Instruction; Human Geography; Interdisciplinary Approach; Locational Skills (Social Studies); Physical Geography; *Skill Development; Social Sciences; *Social Studies

ABSTRACT

The role of geography in the elementary school curriculum is examined in this paper, which is arranged in four parts. Part 1 briefly sketches the characteristics of geographic instruction at different periods in U.S. history. Intellectual development and social education are identified as two widely accepted goals for elementary education today. In general, intellectual development means acquiring important information, mastering basic skills, comprehending significant ideas, and increasing thinking abilities. Social education means the analysis of social problems, the examination of personal and social values, and the ability to make choices and decisions. The objectives for geographic education, presented in part 2, are organized into four categories--objectives related to factual learning, objectives related to skill learning, objectives related to ideational learning, and objectives related to more complex intellectual processes. A checklist for evaluating geographic education programs in elementary schools is provided in part 3. An introductory bibliographic essay follows in part 4, which is intended for use by social studies educators as they develop or reorganize geographic components of the elementary school curriculum. The essay lists sources on geography in the elementary school and on objectives and evaluation in geographic education. References are included. (Author/DB)

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TOWARD GEOGRAPHIC LITERACY: OBJECTIVES FOR GEOGRAPHIC EDUCATION IN THE ELEMENTARY SCHOOL

by

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SO 009 720

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Published jointly by:

ERIC Clearinghouse for Social Studies/Social Science Education, Boulder, Colorado

and

Social Science Education Consortium, Inc., Boulder, Colorado

1977

The material in this publication was prepared pursuant to a contract with the National Institute of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Prior to publication, the manuscript was submitted to the National Council for Geographic Education for critical review and determination of professional competence. Points of view or opinions, however, do not necessarily represent the official view or opinions of either the National Council for Geographic Education or the National Institute of Education.

ORDERING INFORMATION

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PREFACE

In the early 1900s, geography was a highly visible subject in the elementary school curriculum. More recently, the identity of the discipline of geography has become diffuse, being vaguely defined as one element within a broad social studies program. In an earlier paper published by SSEC and ERIC/ChESS, George Vuicich and Joseph Stoltman presented a review of the changing position of geography in elementary and secondary curricula from the 1800s to the present (Vuicich and Stoltman, *Geography in Elementary and Secondary Education: Tradition to Opportunity*, SSEC Publication #171, Boulder, CO: ERIC/ChESS and SSEC, 1974). Analysis of their work leaves little doubt that geography as a school subject in the United States has been affected by changing views of the nature of social studies and social science education. These changes include the development of an expanded concept of the social studies curriculum to include most of the social science disciplines, a focus on multi- or interdisciplinary curriculum patterns, and a focus on basic concepts that cut across the various social science disciplines.

In 1975 the National Council for Geographic Education (NCGE) established a Task Force on Elementary and Secondary Education. One of the initial assignments of the Task Force was to examine the elementary school curriculum and the role of geography therein.

As part of its continuing interest in collaborating with professional associations to publish worthwhile products for the education community, ERIC/ChESS has collaborated with NCGE in the development of this paper. The authors, two very competent and well-known geographic educators, were commissioned to develop a paper that would help to clarify a role for geography in the elementary school curriculum.

Manson and Vuicich have produced a useful volume. They have identified and discussed specific objectives within four categories--facts about places, geographic ideas, spatial competence, and intellectual processes. They offer a checklist for evaluating geographic education programs in elementary schools. Finally, they present a bibliographic essay that will be useful to social studies educators as they begin to

develop or reorganize the geographic components of the elementary school curriculum. Busy educators will appreciate the concise fashion in which the authors have presented ideas of substance and practicality.

We appreciate the efforts of NCGE and the authors in producing this volume.

James E. Davis
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TOWARD GEOGRAPHIC LITERACY:
OBJECTIVES FOR GEOGRAPHIC EDUCATION IN THE ELEMENTARY SCHOOL

by

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and

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A comprehensive educational program involves many kinds of subject matter and learning experiences. This paper discusses the role of geography in the elementary school. Part 1 reviews two goals of elementary education--intellectual development and social education. From these goals, specific objectives for geographic education are derived and presented in Part 2. Part 3 is a checklist intended to help answer the question, "To what extent are these objectives reflected in the programs, practices, and outcomes of elementary education?" For those who wish to go beyond this paper, an annotated bibliography is provided in Part 4.

Part 1: Geography and Elementary Education

Geography has been an integral part of elementary education for almost two centuries. Both geography and education have changed a good deal during those years, but there still is a familiar ring to the geography taught and learned long ago. Consider, for instance, the "gazeteer geography" characteristic of many American schools during the 1820s ("Geography a Century Ago" 1933, p. 298).

CERTIFICATE

> Elizabeth Crane hath been engaged, during her attendance at this school, in storing her memory, that strong and capacious storehouse of mankind, with useful ideas, lessons and information generally.
>
> She hath repeated the principal divisions, oceans, islands, etc., and answered 109 questions on the map of the world. She hath recited the principal divisions, lakes, rivers, bays, gulfs, etc., and answered 141 questions on the map of North America.
>
> She hath defined the boundaries of 12 of the United States and repeated 95 of the chief towns and 33 of the principal rivers belonging to these 12 states and answered 86 questions corresponding to the geography of that fine country.

> On the map of South America, she hath committed to memory the different countries belonging to that great peninsula and repeated 58 chief towns and 33 of the principal rivers and answered 39 questions corresponding with its geography.
>
> Let no one say, hereafter, that females cannot learn, for that is an assertion without foundation. Elizabeth is living proof to the contrary and she merits the approbation and encouragement of her parents and friends.
>
> Morristown, New Jersey (signed) P. Warden
> March 8, 1826

A century later geography in the elementary school had evolved into the study of "lands and peoples." Children still learned place locations, but more attention was given to the environments and cultures found in strange and wondrous places (Bacon 1967, p. 609).

> In my mind's eye I see them yet, sweeping like a moving mirage over the silent emptiness of the Sahara. These were the nomads, the only true dwellers of this greatest of the world's deserts . . . I recall the father, irascible leader, his stern face bronzed and creased by the searing sun, continually moving his family and his herds like a lost seaman over the interminable ocean of sand. But most of all, I remember young Ismail, faithful guardian of his father's flocks. What a marvelous lad! It was Ismail who could find pasture when starvation seemed imminent. It was Ismail who swiftly warned of danger when the sky took on a yellowish cast, certain sign of the coming of the chergui--that devastating wind from the southwest that stirs up sand, withering and smothering everything in its path. And it was Ismail who knew that our only salvation at the time of the chergui was to throw the center post of the tent to the ground, where, crouched together beneath the heavy camel hair fabric of the flattened tent, we waited out the storm.

Today, geography continues to be a prominent part of elementary education, but it is not the geography of the 1820s or the 1920s. Children learn place locations and they study lands and peoples, but now geography is combined with other disciplines, such as economics, anthropology, and sociology, into a "social studies" curriculum (Williams and Saveland forthcoming).

> In one classroom, children are moving around to a number of pupil-oriented donut shops, trying to decide where the best and cheapest donuts can be purchased. In another classroom, pupils have been studying business growth in the old hometown and they are getting ready to interview businessmen about

their decision to locate their business in a nearby shopping center rather than downtown. In a fifth grade classroom, the children are comparing American and Eskimo views of death and opining as to which group is more humane. Elsewhere a class has just viewed a film vividly depicting the pressing problems of American cities and is now listing on the chalkboard several hypotheses concerning what caused these problems. Subsequently, they will divide into interest groups with the task of collecting information regarding these various ideas.

Two Goals for Elementary Education

Whether geography, economics, anthropology, or sociology, the role played by any discipline in the curriculum of the elementary school is a reflection of the goals of elementary education. Not surprisingly, these goals have changed during the past 200 years. The colonial school was expected to teach children how to read and understand the principles of religion and the capital laws of the country, a goal involving little geography. During the 19th century the elementary school assumed responsibility for general education, which not only provided for reading, writing, arithmetic, and history, but also required children to acquire a knowledge of places. Then, a gazeteer geography and, later, lands-and-peoples geography became part of the elementary school curriculum. By the early 20th century, the goals of the elementary school expanded to include education for citizenship, and geography became part of a multi-disciplinary curriculum centered on preparing children to become loyal and informed members of society (Tanner and Tanner 1975).

Today, the goals of elementary education include basic skills, general education, and citizenship. They also range across physiological, psychological, sociological, and ethical domains. Not uncommonly, elementary schools list psychomotor proficiency, self-fulfillment, and moral education as well as competency in reading, writing, and arithmetic among their aims. Some critics lament this diversity of purposes, arguing that no single institution can accomplish or should assume all these responsibilities. However that may be, it is clear that the purposes stated for elementary education in the latter part of the 20th century are diverse, complex, and difficult to achieve. (Rogers 1975)

The goals may range across a wide spectrum, but two are shared by virtually all elementary schools--intellectual development and social education. In general, intellectual development is taken to mean the acquisition of important information, the mastery of basic skills, the comprehension of significant ideas, and the honing of thinking abilities. Social education is taken to mean the analysis of social problems, the examination of personal and social values, and the ability to make choices and decisions. Unfortunately, intellectual development and social education sometimes are regarded as separate and incompatible educational goals. For example, some curricula have stressed information, skills, ideas, and thinking abilities but neglect social issues, whereas other curricula stress problem solving, value analysis, and decision making but ignore fundamental facts, concepts, and competencies. Yet, intellectual development and social education can be complementary and compatible. Specifically, intellectual development can be aimed at effective and responsible citizenship, while social education can be predicated on a firm foundation of accurate, powerful knowledge. It is this latter view of the reciprocal relationship between intellectual development and social education which underlies this paper. (See Joyce 1972.)

One way to link and pursue intellectual development and social education effectively and efficiently is through the selection of curriculum subject matter and learning experiences that lend themselves to the attainment of both goals simultaneously. It is likely that many different themes can be developed in this manner, but the "places" theme seems particularly suitable for the intellectual development and social education of young children. From the perspective of social education, problems associated with such places as the neighborhood, community, state, nation, and world are significant and interesting. From the perspective of intellectual development the facts, ideas, and skills required to understand places are important and useful contributions to children's cognitive growth. It is for this reason that the objectives proposed in this paper are structured around the "places" theme.

Part 2: Objectives for Geographic Education

The objectives for geographic education proposed in this paper are organized into four categories--objectives related to factual learning, objectives related to skill learning, objectives related to ideational learning, and objectives related to more complex intellectual processes. Each category is discrete in the sense that somewhat different teaching/learning strategies are involved; but underlying these objectives is a unity arising from the interdependence of the facts, skills, ideas, and processes needed to understand places. For this reason, no category of objectives should be construed as more or less important than the others, nor is any particular curriculum sequence implied by the order in which the objectives are presented.

Four general points should be made regarding educational objectives. First, the number of objectives that could be derived from any discipline, including geography, vastly exceeds the number of objectives that can be accommodated in the elementary school. Our principal criterion for selecting the objectives listed below was their contribution, in important and substantial ways, to the intellectual development and social education of children. In addition, three more specific criteria were applied:

1) Does the objective reflect the geographic discipline? In other words, is it "good" geography?
2) Does the objective reflect social realities? In other words, is it "useful" geography?
3) Does the objective reflect the psychological development of children? In other words, is it "learnable" geography?

Second, educational objectives are statements of intended learning outcomes. That objectives are intentions does not mean they are always achieved nor that unintended learning does not occur. Objectives merely identify the hoped-for outcomes of instruction and provide some notion as to what is desired as a consequence of educational experience. Untimately, what is learned depends on what is experienced by the child, not what is intended by the teacher or the curriculum developer. The key to geographic education is the provision of recurrent, diverse, and rich opportunities for learning.

Third, educational objectives can be stated at several levels, including the lesson level, the unit level, and the grade level (Kurfman 1970a). In this part of the paper, we identify broad objectives for the elementary school curriculum. From these objectives, grade-level, unit-level, and lesson-level objectives may be derived. The precise scope and sequence of objectives at these more specific levels will depend on local needs and circumstances, but a comprehensive program in geographic education will contain instruction and experiences in each of the areas identified.

Finally, it is our opinion that attainment of these objectives will contribute to the intellectual development and social education of children. We would prefer to offer objectives grounded in research demonstrating these linkages rather than in professional opinion merely asserting this to be the case. Unfortunately, the status of research in geographic education does not permit us to submit much evidence in support of what we believe to be true (Saveland and Pannell 1976). However, we are not overly embarrassed by the paucity of data linking geographic learning with intellectual development and social education. Virtually every other facet of the educational enterprise is in similar circumstances. Until the data are "in," which is not likely in the foreseeable future, informed professional judgment must suffice.

1.0 Children Should Learn Important and Useful Facts about Places

Most people agree that children should learn facts, but there is little agreement on which facts are most important. It is a fact that the high temperature in Lansing, Michigan, on October 29, 1976, was 38°F. It is also a fact that the largest city in Michigan is Detroit. Are both facts important? Is neither important? Is one more important than the other? Are these facts more important for some children, say residents of Michigan, than for other children? These are difficult questions and they have yet to be answered satisfactorily. But some answers, however tentative, must be provided because factual learning is important and it cannot be ignored in the classroom.

1.1 Children Should Learn the Location of Places.* Intelligent, informed citizens know where important places are located. Toward that end, children in elementary school should begin learning place locations. Younger children might learn the locations of important physical, economic, and cultural features in their local area. Older children might learn the names and locations of the states and larger cities of the United States as well as the continents, oceans, and major nations of the world. Children need not emulate Elizabeth Crane, but "whereness" is part of geographic literacy.

Location can be expressed in two basic ways. The first, called "absolute" location, derives from coordinate systems and is reflected in activities such as locating Chicago with a map grid system. The second way of locating a place, called "relative" location, derives from that place's position *vis á vis* other places. The relative location of Chicago includes its position at the southern end of Lake Michigan, which provides water access to the heart of the continent. Chicago's relative location also includes its position in the center of the United States' agricultural interior and at the apex of a major industrial region.

1.2 Children Should Learn the Characteristics of Places.** A place has qualitative characteristics as well as a location. What is this place like? is a question as important as, Where is this place?

Two kinds of place characteristics ought to be stressed. Facts related to magnitude are important because they, like facts concerning location, help children develop a spacial framework for the world around them. Younger children can learn, for instance, how to compare two local areas such as the playground and park by pacing around them and determining which is larger. Older children can learn more sophisticated techniques of measuring local areas, and they can begin acquiring factual information about the size of more distant areas. Specific numbers are less important than approximations--for example, "The United States and China are roughly the same size" or "The top of Mount Everest is almost six miles above sea level."

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*Adapted from *Advisory Paper* . . . (1962, pp. 21-23).

**Adapted from *Advisory Paper* . . . (1962, pp. 21-23).

Facts related to significant physical, cultural, and economic features should be taught as patterns. More important than specific temperatures on particular days, for instance, are facts about the seasonal patterns of temperature in a particular place. Similarly, facts about the numbers of people in different places can be taught and learned as a spatial distribution pattern; facts about resource utilization can be taught as an economic development pattern; and facts about landforms can be taught as a physiographic pattern.

2.0 Children Should Learn Fundamental and Significant Ideas about Places

Ideas help children organize facts and interpret their experiences (Tanck 1969, p. 101). Through the acquisition of powerful, useful, and meaningful ideas, children will understand better the "bloomin', buzzin' confusion" around them. No idea will be comprehended fully by a child, but the elementary school is the place to begin teaching ideas that will help children understand the world in which they live. Among the sources of useful and powerful ideas are the various scholarly disciplines. From geography come ideas that will help children understand places--in particular, ideas concerning the relationships between people and their surroundings and ideas concerning the spatial organization of their society. These two sets of ideas do not exhaust the content of the geographic discipline, but they do represent central themes in geographic inquiry (Taaffe 1974). More important, however, is their contribution to helping children comprehend and deal with the world around them.

2.1 Children Should Learn the Meanings and Relationships of Population, Environment, Organization, and Technology. Understanding the relationship between people and their surroundings involves many ideas, but four are paramount--population, environment, organization, and technology (Spencer and Thomas 1969, pp. 110-12).

Population refers to the people occupying a place. Among the significant attributes of a population are number, distribution, growth and decline, and migration. Less tangible but equally important characteristics are the beliefs, perceptions, and experiences of a particular population.

Environment includes natural phenomena such as landforms, climate, soils, vegetation, water, and wildlife, which are themselves interdependent phenomena. Current usage in geography extends the meaning of environment to include manmade phenomena such as houses and highways. Churchill's remark that we shape our cities but our cities also shape us acknowledges the manmade facet of the environment, and it also calls our attention to the intimate relationship between people and their surroundings.

Organization derives from the fact that individuals are not equipped to live in isolation from each other; consequently, human activity usually involves organization of various kinds. Of special importance is economic activity and organization because production, consumption, and exchange of goods and services occur in places, vary from place to place, and are affected by the nature of the place in which they occur.

Technology refers to the sum total of knowledge, skills, tools, and techniques developed to satisfy human wants and needs. In groups characterized by smaller numbers and less complex social organization, the technology may be fairly simple and incapable of modifying the environment in drastic ways. Larger groups with more complex social organization tend to utilize more potent technology and often recreate, and occasionally destroy, their environment. Changes in technological capability not only affect the environment but also may influence population and social organization. Examples range from the automobile, which radically transformed population distribution, to the Industrial Revolution, which drastically modified the economic geography of western Europe.

2.2 Children Should Learn the Meanings and Relationships of Spatial Distribution, Spatial Association, Spatial Interaction, and Spatial Process. Many geographers believe that a spatial perspective on places is the distinguishing feature of their discipline (Morrill 1970). However that may be, developing a spatial perspective on the world around them will facilitate children's intellectual development and social education, for the spatial component of intelligence is well documented and the spatial elements inherent in such social problems as transportation and urbanization are evident. Thus, the spatial perspective has a role to play in elementary education, despite its absence from many classrooms and most curricula.

Among the ideas relevant to the spatial perspective are distribution, association, interaction, and process.* These ideas can be applied to any phenomena, but population, environment, organization, and technology ought to be emphasized. In this way, ideas related to people and their surroundings and ideas related to spatial organization can be combined into a framework of ideas suitable for learning about places.

Most phenomena are arranged in the earth's surface in distinctive, orderly ways. These arrangements are called spatial distributions. Being able to recognize and describe spatial distributions is part of geographic learning. For instance, in their study of a western state, children may discern that the population is aligned along routes of transportation, clustered around natural resources, and concentrated in the southern portion of the state. They also may discover regularities in the distribution of crops, land use, climate, towns, and so forth. Spatial distributions of various phenomena exist at every scale in every setting; hence, opportunities to teach and learn the idea of distribution exist at all grade levels.

When we raise the question of why a particular distribution is arranged as it is, we are asking about associations. An association is said to exist when one or more distributions are used to predict or explain another distribution. For young children it may be that some associations are too complex but many associations are not out of the range of understanding of children. In the earlier example of population distribution in a western state, two simple associations were implied: the association between population distribution and transportation routes and the association between population clusters and the location of natural resources. Obviously, transportation and resources are not the complete explanation for why these people live where they do, but they certainly are important parts of the explanation.

Movement between places is called spatial interaction. Physical phenomena such as tides and glaciers have always moved aross the earth's surface and, of course, so have people and their cultures. But modern transportation and telecommunication have accelerated the rate, increased

*Adapted from Ridd, (forthcoming). See also Thomas (1964).

the range, and amplified the impact of movement. Thus, understanding the 20th century entails understanding spatial interaction (Brock and Webb 1973, pp. 17-18). Within the realm of population children might learn about migration, the movement of people from place to place. Immigration to North America is an obvious example, but other kinds of "people movement," such as commuting and vacationing, should not be ignored. From the environment comes the movement of matter and energy within the various physical systems; examples suitable for children are river systems and weather systems. Spatial interaction between different societies is most obvious in trade, the movement of goods from place to place. Trade occurs, of course, at local, regional, national, and international scales; hence, children are studying trade when they examine shopping at the supermarket, the flow of iron ore to Gary, Indiana, or the importation of automobiles from Japan.

Changes occurring in systematic, describable ways are called processes (Steinhauser, n.d.). Some processes, such as biologic and geologic processes, are slow to effect discernible changes but their impact on earth is profound; consider, for instance, plate tectonics, or "continental drift," as it is sometimes called. Other processes, such as the diffusion of innovation, occur over shorter spans of time and are more readily observed. For instance, the spread of modern technology, ranging from transistors to nuclear reactors, has altered profoundly the lives of many people. Processes concern both the past and the future of places. The impact of the past on the geography of the present is evident in houses, street and field patterns, transportation modes and routes, stage of economic development, and so forth. Processes, physical as well as social, also create the geography of the future. Here children can learn to anticipate the outcomes of certain processes through activities such as weather forecasting and to understand how other processes are affected through activities such as urban planning. The study of processes unifies the past, present, and future of places.

3.0 Children Should Learn Basic and Practical Spatial Competencies*

Skills range across many domains of learning and areas of curriculum. Currently, the educational literature mentions not only reading, writing, and arithmetic skills, but also human relations skills, critical thinking skills, and career selection skills, to mention only a few. Underlying these diverse skills are two unifying ideas:

1) Being skillful means being able to act effectively and efficiently.
2) A necessary condition for effective and efficient action is the ability to process information.

Acting effectively and efficiently in geographic settings is spatial competence. Spatial competence consists of such abilities as locating and orienting objects in space, adopting alternative perspectives of geographic phenomena, constructing appropriate models of portions of the earth's surface, and interpreting symbolic representations of places. Spatial competence is reflected in many activities, including toy play, games, and orienteering.** Such activities can and should be used to develop spatial competence. For example, younger children can construct and use simple models and maps of their classroom, school, and community. Older children can map such distributions as population density and income. Younger children can learn to read simple maps of their school, neighborhood, and community, while older children can develop their map-interpretation skills by using road maps, atlas maps, topographic maps, and, of course, the globe. Whatever the level or activity, four notions are central to spatial competence: location, direction, scale, and symbol.

3.1 Children Should Learn to Use Locational Systems. Maps are used to record and display the location of phenomena by means of coordinate systems. Both map making and map using depend on an ability to utilize a coordinate system in order to establish correct locations. The plane

*This objective is suggested in William D. Pattison (1971b).

**Orienteering, an activity of Swedish origin, is "a competitive exercise in which participants find their way along a predetermined course using a map, compass, and perhaps a series of teacher-supplied clues. The objective is to find the shortest route around a series of control points." (Jacobson and Palonsky 1976, pp. 44-45, see also "Over the River, Into the Trees" 1976.)

coordinate system is familiar to users of city street maps and state highway maps; it can be taught to young children through devices such as seating charts and bingo games as well as maps themselves. The spherical coordinate system is more complex and should be reserved for older children because understanding the latitude/longitude scheme depends on recognition of the properties of a sphere (Myer 1973). Such understanding is best facilitated through study of the globe.

3.2 Children Should Learn to Use Direction Systems. Direction refers to the orientation of phenomena on the earth's surface. Orienting or aligning phenomena properly is an important part of map making, just as ascertaining which way to go is an important part of map using. Pattison (1965) identifies three direction systems to be emphasized in elementary schools: personal, environmental, and global. Personal directions emanate from the individual and use terms such as left and right. Environmental directions derive from objects in the environment and use words such as toward, away, and around. Personal and environmental directions are rarely used in connection with maps, but they are important in helping young children develop spatial competence. Global directions derive from fixed points on the earth's surface, that is, the north and south poles. This direction system is more complicated and should be reserved for the upper elementary grades (Myer 1973). All geographic learning should be related to the "real" world, but it is especially important to connect global directions with the immediate local environment. This can be done through such activities as compass traverse, field orienteering, and map orientation.

3.3 Children Should Learn How to Use Scale Systems. Maps are reductions of the earth's surface and a map scale specifies the proportional relationship between the map and reality. The notion of proportional relationships can be introduced to young children by focusing their attention on ideas reflected in terms such as larger, smaller, nearer, and closer, particularly when they are constructing simple models of home, school, and neighborhood. Later, children can begin learning to use more formal versions of map scale, such as verbal scales and bar scales. Representative fractions, or ratio scales, in our opinion, should be deferred at least until middle school.

3.4 Children Should Learn How to Use Symbolic Systems. Just as words represent realities, so, too, do map symbols. Just as young children should learn to use certain words in lieu of certain realities, so, too, they should learn to use certain map symbols in lieu of certain geographic phenomena. This approach implies that maps are a medium of communication and intimates a similarity between learning to read and write and learning to interpret and make maps.

Children should learn to construct and interpret three types of map symbols. Point symbols represent specific places, such as cities, and particular features, such as churches. Line symbols signify connections between two or more points. Line symbols range from a series of dots representing political boundaries to arrows of various widths representing different flow volumes. Area symbols represent the extent of some geographic phenomenon. Climatic types and land-use patterns are two phenomena ordinarily represented by area symbols.

4.0 Children Should Learn Powerful and Practical Ways of Thinking about Places.

Different ways of thinking are employed for different purposes. Two ways of thinking might be called "investigation" and "problem solving." Neither way of thinking is peculiar to geography, but both can be developed through the study of places.

4.1 Children Should Learn to Investigate Places. Put most simply, investigation means seeking answers to questions about the world in which we live. Being capable investigators of important and perplexing questions is an especially important competence for citizens living in a changing society where traditional answers sometimes fail and novel questions continually arise. Ideally, investigation begins with questions that are personally and socially relevant. These questions often arise in contexts such as the neighborhood, the community, and the nation, topics commonly examined in the elementary school. Investigation continues by collecting information and acquiring experience relevant to the questions. Information can come from a variety of sources, including interviews, observations, photographs, books, and resource people. This stage of investigation also implies direct, firsthand, on-site experiences, which

geographers call "fieldwork." Although much meaningful learning is vicarious, symbolic, and mediated, fieldwork, involving immediate contact with the phenomena being investigated, is extremely important for children (Barker 1974, pp. 83-84).

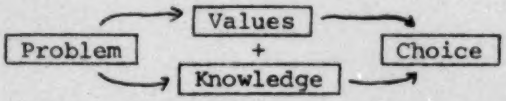
> It is sometimes revealing to ask older town-dwelling pupils . . . to make a mark on a wall representing the height of a fully grown dairy cow. If the youngsters do this independently so that they are not affected by each other's attempts, a quite astonishing range of answers often results. It is not unreasonable to suggest that there is something amiss if youngsters who can write quite convincingly . . . about the dairy industry . . . cannot indicate the size of the animals concerned, nor is it so unreasonable to regret that they have, apparently, never visited a farm or looked closely at a cow.

The third step involves organizing the information in formats that lend themselves to interpretation. For the geographer, a traditional means of organizing information has been the map, an ideal way to display information in a spatial format. Map making should be a part of the elementary school program, but only insofar as it facilitates children's ability to organize information relevant to their investigations. Beyond map making, children should also learn to organize and interpret information in such forms as tables, charts, and graphs, as well as collages, reports, and scenarios. Although these devices are not peculiarly geographic, they are used frequently by geographers to organize information about places.

Finally, the information must be interpreted and evaluated in terms of the light it sheds on the question at hand. Definitive answers may be found occasionally, but more often, partial or even inadequate answers result. Nonetheless, a properly conducted investigation cluminating in a less-than-satisfying answer is valuable from an educational point of view because children will have learned more about the investigatory process.

4.2 Children Should Learn to Analyze the Problems of Places. Learning to analyze problems is part of one's intellectual and social development. The problems children encounter range from the frequent, simple difficulties associated with everyday life to the enduring, pervasive social issues confronting society. But whatever their scope and complexity, problems are part of the human experience, and children should begin learning how to deal with them.

A simplified version of problem analysis is shown in the diagram below.



Problems exist when there is a gap between the way things are and the way we wish things to be. Invoking knowledge about the problem is an important part of the process, but so is a consideration of the values, that is, what we want. Choice, or decision, may follow consideration of a problem, but the problem analyst also may conclude that no action can, or should, be taken.

Like investigation, problem analysis ideally begins with a problem that is personally relevant and socially significant. Such problems may originate in children's experiences or they may be introduced by the teacher; among likely problem themes relevant to places are environmental degradation, resource utilization, and land-use conflicts. The initial stage of problem analysis consists of exploring the problem. It is here that a major link between problem analysis and investigation, particularly fieldwork, is evident. Problems are "real world" phenomena and they can be appreciated only to the extent that they are seen, heard, smelled, and so forth.

A problem experienced is not a problem comprehended; hence, another stage of analysis is the acquisition of knowledge concerning the problem. Here, facts and ideas about the causes, characteristics, and consequences of the problem are principal concerns. Particularly important is knowledge that not only accounts for the origins of the problem but also can be applied in efforts to resolve it. In other words, the knowledge should have "problem solving potential."

Most problems involve values and value conflicts. Values are ideas about what is important. Problems often originate in disagreement about what is most important. Two phases of value analyses are suitable for elementary school children--value awareness and value comprehension. Value awareness refers to the recognition of the values, personal as well as social, present in a problem situation (Cole 1974, p.1). Developing value awareness in children is essential because they may not recognize the fact that all people do not necessarily value the same things in the same way, and consequently, problems may result. Value comprehension

differs from value awareness in that comprehending a value requires knowledge of the reasons and experiences underlying that value.

Problem solving implies decision and action, the final phase of the process (Cole 1974, p. 32). Essentially, decision and action mean deciding what to do about a problem, then going ahead and doing it. Quite obviously, there are numerous constraints on decision and action, including feasibility, cost, maturity, and controversy. But children can learn to choose from among alternative solutions to a problem after a careful consideration of the consequences, even if the decision is made in a simulated setting. On occasion children can try to implement their proposed solutions to problems, especially if the problem only concerns the classroom, school, or neighborhood.

Part 3: Evaluating Geographic Education

To what degree have the students in a particular class achieved the objectives presented in this paper? To what degree do the teachers in a particular school provide opportunities for geographic learning? To what degree are the instructional materials used in a particular district contributing to the teaching and learning of geography? The need for answers to questions such as these prompted the development of the checklist presented on the following page.

Evaluation is an extremely important part of the educational process, but it is also complex and time consuming. This checklist does not replace achievement tests, classroom observation, materials analysis, or any other way of collecting evaluation data. Instead, the checklist should be used as a guide and stimulant for ascertaining the status of geographic education in a classroom, school, or district. The judgments requested are subjective and crude, but thoughtful and careful educators will, upon reflection, be able to establish a reasonably good idea about the quality of their program by trying to answer the checklist questions.

Each question derives from the objectives stated in Part 2 of this paper. Like the objectives, the questions are to be interpreted as K-6 program outcomes. More useful, however, would be grade-level specifications for each question; for instance, precisely which places should a

Checklist for Evaluating Geographic Education

Rating	Item
	1.0 Facts about places
3 2 1 0	1.1 Can students identify and describe place locations?
3 2 1 0	1.2 Do teachers provide opportunities for children to learn place locations?
3 2 1 0	1.3 Do instructional materials contain adequate and accurate descriptions of places?
	2.0 Geographic ideas
3 2 1 0	2.1 Do the students understand the ideas of environment, population, organization, and technology? Do they understand how these ideas are related to one another?
3 2 1 0	2.2 Do the students understand the ideas of distribution, association, interaction, and process? Do they understand how these ideas are related to one another?
3 2 1 0	2.3 Are the teachers focusing instruction on specific concepts and generalizations emanating from population, environment, organization, and technology?
3 2 1 0	2.4 Are the teachers aiming instructional activities at specific concepts and generalizations related to spatial patterns, spatial movements, and spatial changes?
3 2 1 0	2.5 Are the instructional materials presently in use designed around the geographic ideas outline in this paper? If not, can these materials be used to develop these ideas?
	3.0 Spatial competence
3 2 1 0	3.1 Can students use maps in the field as well as the classroom?
3 2 1 0	3.2 Do teachers provide systematic training in map making as well as map using?
3 2 1 0	3.3 Are adequate types and amounts of maps, atlases, and globes, as well as map-related instructional materials, available in classrooms?
	4.0 Intellectual processes
3 2 1 0	4.1 Can the students conduct a satisfactory investigation of questions related to places?
3 2 1 0	4.2 Can the students suggest feasible, reasonable solutions to geographic problems? Can they make informed, responsible decisions about geographic problems?
3 2 1 0	4.3 Do teachers use fieldwork in their teaching?
3 2 1 0	4.4 Do teachers provide problem-solving and decision-making experiences?
3 2 1 0	4.5 Are the instructional materials designed for investigation-oriented and problem-oriented learning?

second grader be able to locate, or exactly what kind of map should a fifth grader be able to use? Specifying guideline questions for different grade levels not only will make evaluation easier, at least in the long run, but also will clarify the curriculum implications of this paper for children of different ages and grades.

To use the checklist, simply circle the rating for each specific item according to the following informal scale:

3 = Superior; Excellent; Hard to Improve

2 = Good; Better than Average; Some improvement Possible

1 = Fair; Average; Much Improvement Possible

0 = Poor; Below Average; Anything Would Be An Improvement

You may wish to sum the ratings into subscores and total scores, but we recommend greater emphasis be placed on the processes of arriving at a particular rating and deciding on the implications of a rating.

Part 4: A Bibliographic Essay

This brief bibliography is intended for persons who are interested in learning more about geographic education but who are not specialists in the field. We have consulted all the sources listed, but we do not claim our positions and interpretations always correspond with the various authors listed. We urge that users of this paper consult these, as well as other sources of information on geographic education.

Geography in the Elementary School

The story of the U.S. elementary school is fascinating. As a starting point, we suggest *The Elementary School in the United States* (Goodlad and Shane 1973), especially Chapters 2 and 3. *Perspectives on Curriculum Development: 1776-1976* (Davis 1976) provides a succinct historical overview of curriculum change in the U.S. during the last two centuries, with several chapters focused on the relationship between school and society. Definitive studies of geography's role in elementary education during those years are lacking, but James' "The Significance of Geography in Elementary Education" (1969) and Vuicich and Stoltman's *Geography in Elementary and Secondary Education: Tradition to Opportunity* (1975) are helpful.

It was not only the schools that changed during the first two centuries of the American experience, for geography itself also changed. James' *All Possible Worlds* (1972) provides a comprehensive survey of the evolution of the geographic discipline, while *Geography Now and Then* by William Warntz (1964) examines geography in the U.S. during the 18th and 19th centuries. For statements on the nature of "contemporary" geography, see *Geography as a Fundamental Research Discipline* (Ackerman 1958) and *The Science of Geography* (1965); however, the clearest brief response to the question, What is geography?, is Pattison's "The Four Traditions of Geography" (1964, pp. 211-16).

Schooling and the disciplines intersect in the curriculum. This paper rests on a conception of curriculum first described by Ralph Tyler in *Basic Principles of Curriculum and Instruction* (1950) and subsequently elaborated by Hilda Taba in *Curriculum Development: Theory and Practice* (1962). [We are aware of some limitations and criticisms of this conception, particularly those collected in Pinar's *Curriculum Theorizing* (1975).] Central to the Tyler-Taba model of curriculum are goals and objectives. Goals for the elementary school are reviewed in Bruce Joyce's *Alternative Models for Elementary Education* (1969); goals for social studies education are considered in *New Strategies for Social Education* (Joyce 1972); and goals for geographic education are examined by William Pattison in "The Educational Purposes of Geography" (1971a). Those interested in how to operationalize goals into specific objectives should consult Clegg's "Developing and Using Behavioral Objectives in Geography" (1970).

But what about the children: can they learn geography? Is geography relevant to their developmental needs and status? Answers to these questions are complex but some excellent work has been done, inlcuding Mitchell's classic, *Young Geographers* (1934). More recent discussions, some relating Piaget's work to spatial learning, are Hanna's *Geography in the Teaching of the Social Studies* (1966), McCartin's "The Cognitive and Affective Learning of Children" (1970), and "The Development of Spatial Cognition" by Hart and Moore (1973).

Objectives for Geographic Education

Defining places as distinctive areas of the earth's surface raises the issue of regions and regionalizing, which essentially means delineating areas of the earth's surface in some systematic way. A good introductory discussion of this topic is Kohn's "Regions and Regionalizing" (1964), which includes examples from a fourth-grade textbook. A more comprehensive, integrative approach to the study of regions is "Approaches to Regional Analysis" by Brian Berry (1964).

Location, a principal attribute of places, is a topic that has generated a voluminous geographic literature. We recommend the informal approach taken on pages 7-9 of Peter Haggett's *Geography: A Modern Synthesis* (1975); indeed Chapter 1 provides an excellent overview of geography and the study of places. What are places "really" like? This question can be answered in two ways: regionally and topically. Among sources of regional information that teachers may find useful are *Regional Geography of the World* (Wheeler et al. 1975) and *North America: A Geography of Canada and the United States* (Paterson 1975). Sources of information about places that are organized topically are *Human Geography* (DeBlij 1976) and *A Geography of Mankind* (Brock and Webb 1973). Obviously, these should be supplemented with periodical material such as *Focus*, published by the American Geographical Society.

The classic statement on maps and mapping in the classroom is Pattison's "Territory, Learner and Map" (1966). Educators interested in learning more about maps and mapping might examine Tyner's *The World of Maps and Mapping* (1973), Greenhood's *Mapping* (1964), and Robinson and Sale's *Elements of Cartography* (1969). The links between map skills and spatial cognition have yet to be made explicit. Among the sources relevant to this question are "Studies in Geographic Learning" (Blaut and Stea 1971), Piaget and Inhelder's *The Child's Conception of Space* (1967), and *Children's Spatial Development* (Eliot and Salkind 1975).

The population-organization-environment-technology framework, sometimes called the POET scheme, is summarized in Duncan's "From Social System to Ecosystem" (1961). Geographic applications are presented in Zelinsky's *A Prologue to Population Geography* (1966), especially Chapters 5-12, and his *Cultural Geography of the United States* (1973). For

elementary teachers, the May 1970 issue of the *Journal of Geography* contains several examples of lessons built around the POET scheme.

The spatial perspective may puzzle nongeographers. For a provocative introduction, see *An Invitation to Geography*, especially the chapter "Geography in Everyday Life" (Lanegran and Palm 1973). Other sources, somewhat more technical, are *Spatial Organization* (Abler et al. 1971), *Man, Location and Behavior* (Cox 1972), and *Geography as Social Science* (Fielding 1974). At the elementary school level, most applications of the spatial perspective concern the city; for example, the May 1969 issue of the *Journal of Geography* contains several articles on spatial aspects of the city.

Helping children learn to think via investigations of geographic phenomena is well exemplified in Crabtree's "Supporting Reflective Thinking in the Classroom" (1967). Ideas for investigations of the local community abound in *The Local Community: A Handbood for Teachers* (High School Geography Project 1971) and "Teaching Geography Out-of-Doors" (Anderzhon and Newhouse 1959). Although it is written for a college-level course, Hill's "Learning Geographic Concepts in the Local Area" (1968) is an excellent example of how to integrate ideas and investigation.

Problems that can be examined from a geographic perspective are numerous. A good source of ideas is the McGraw-Hill *Problems in Geography Series* (Taaffe 1971), which includes such titles as *The Geography of Crime and Justice, The Geography of Poverty,* and *The Geography of Social Well-Being in the United States.* The *Instructional Activities Series* (1974) published by the National Council for Geographic Education contains several examples of how social problems are handled in the elementary classroom. Value analysis has not generated much geographic literature, although the values concept is implicit in many areas of geographic inquiry, such as environmental perception, land use, and resource policy. Teachers will find Martorella's "Teaching Geography through Value Strategies" (forthcoming) and Kracht and Boehm's "Feelings about the Community" (1975) are excellent sources of ideas. Note also the publication by Cole (1974) listed above. Decision making and the future are even more novel themes for both geography and education. *Spatial Organization* (Abler et al. 1971) does provide in Chapters 12 and 13 an interesting discussion of

decision making, and *Human Geography in a Shrinking World* (Abler forthcoming) is a fascinating collection of essays on geographic futures.

Evaluation in Geographic Education

Two comprehensive discussions of evaluation are *Handbook on Formative and Summative Evaluation of Student Learning* (Bloom et al. 1971), which emphasizes learner evaluation, and *Evaluation in Education* (Popham 1974), which stresses curriculum evaluation. Student evaluation in geographic education is examined thoroughly in *Evaluation in Geography* (Senathirajah and Weiss 1971) and "Evaluation of Geographic Learning in the Elementary School" (Schomburg and Sheridan 1971). Additional examples of achievement test items may be found in Kurfman's "Evaluating Geographic Learning" (1970b) and "An Assessment of the Geographic Learning of Fifth-Grade Students in Michigan" by Bettis and Manson (1975). And what about instructional materials? We are not aware of comprehensive, systematic evaluations of the geography contained in the various materials used in the elementary schools, but we do recommend the study completed by the Joint Council on Economic Education, *Economics in Social Studies Textbooks* (1973), as an example of what can be and probably should be done by geographic educators.

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A number of the references listed below are followed by ED numbers, to indicate that they are indexed and abstracted in the ERIC system. Some of the sources with ED numbers are available through commercial publishers or nonprofit organizations, while others are available only through the ERIC system. If you wish to order any of these sources, check the appropriate ED number in *Resources in Education* (RIE), the monthly index to ERIC documents, in a nearby university library or your district resource and service center. RIE provides price information and ordering addresses.

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